# Module EIT-PAN-304-M-4

## System Theory (M, 3.0 LP)

### Module Identification

| Module Number | Module Name | CP (Effort) |
|---|---|---|
| EIT-PAN-304-M-4 | *System Theory* | 3.0 CP (90 h) |

### Basedata

| | |
|---|---|
| **CP, Effort** | 3.0 CP = 90 h |
| **Position of the semester** | 1 Sem. in SuSe |
| **Level** | [4] Bachelor (Specialization) |
| **Language** | [EN] English |
| **Module Manager** | Pandit, Madhukar, Prof. Dr.-Ing. (EXT \| DEPT: EIT) (/staff/630/) |
| **Lecturers** | Pandit, Madhukar, Prof. Dr.-Ing. (EXT \| DEPT: EIT) (/staff/630/) |
| **Reference course of study** | [EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/) |
| **Livecycle-State** | [NORM] Active |

### Courses

| Type/SWS | Course Number | Choice in Module-Part | SL | PL | CP | Sem. |
|---|---|---|---|---|---|---|
| 2V | **EIT-PAN-304-K-4** (/mhb/courses/EIT-PAN-304-K-4/) | P | - | PL1 | 3.0 | SuSe |

- About **[EIT-PAN-304-K-4]**: Title: "System Theory"; Presence-Time: 28 h; Self-Study: 62 h

### Examination achievement PL1

- Form of examination: **oral examination (30 Min.)**
- Examination Frequency: each semester

### Evaluation of grades

The grade of the module examination is also the module grade.

## Contents

**From [EIT-PAN-304-K-4] System Theory** (/mhb/courses/EIT-PAN-304-K-4/)**:**

- Metrische, normierter und lineare Hilberträume
- orthogonale Basissysteme
- Transformationen
- verallgemeinerte Fourierreihen
- iterativ lernende Regelungen
- Zustandsdarstellung linearer und nicht-linearer
- dynamischer Systeme
- Anwendung der Theorie auf Beispiele in Nachrichten- und Regelungssystemen

## Competencies / intended learning achievements

- Aneignen der Grundlagen von Funktionalanalysis und ihrer Anwendung bei der Darstellung von technischen Systemen
- Beherrschung der Darstellung von Funktionen durch orthogonale Basisfunktionen
- Einblick in die Konvergenzbetrachtung von iterativ lernenden Regelungen

## Requirements for attendance (informal)

### Modules:

- [EIT-EOT-601-M-3] Theoretical Electrical Engineering I (M, 5.0 LP) (/mhb/modules/EIT-EOT-601-M-3/)
- [EIT-EOT-602-M-4] Theoretical Electrical Engineering II (M, 5.0 LP) (/mhb/modules/EIT-EOT-602-M-4/)
- [MAT-00-01-M-1] Higher Mathematics I (M, 8.0 LP) (/mhb/modules/MAT-00-01-M-1/)
- [MAT-00-02-M-1] Higher Mathematics II (M, 8.0 LP) (/mhb/modules/MAT-00-02-M-1/)
- [MAT-00-03A-M-1] Higher Mathematics: Vector Analysis and Differential Equations (for Engineering Students) (M, 8.0 LP) (/mhb/modules/MAT-00-03A-M-1/)
- [MAT-00-03B-M-1] Higher Mathematics: Complex Analysis and Numerics (for Engineering Students) (M, 8.0 LP) (/mhb/modules/MAT-00-03B-M-1/)

## Requirements for attendance (formal)

None

## References to Module / Module Number [EIT-PAN-304-M-4]

| Course of Study | Section | Choice/Obligation |
|---|---|---|
| [EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/) | Elective Subjects | [W] Elective Module |
| [EIT-88.?-SG#2021] M.Sc. Electrical and Computer Engineering [2021] (/mhb/FB-EIT/cos-686/) | Technical Elective Modules | [W] Elective Module |
| [EIT-88.?-SG#2021] M.Sc. Automation and Control (A&C) [2021] (/mhb/FB-EIT/cos-676/) | Elective Modules | [W] Elective Module |